The Use of Peters-Belson Regression in Legal Cases

Joseph L. Gastwirth
George Washington University - Columbian College of Arts and Sciences

Efstathia Bura
George Washington Univesrity

Hiro Hikawa
Five Bridges Advisors, LLC

December 6, 2010

Abstract:
In equal employment cases it is important to compare the salary, hiring or promotion status of minority employees or applicants to that of similarly qualified majority members. Standard regression methods include a binary variable indicating minority status along with major job-related variables to assess whether belonging to a minority has a negative effect.

Implicitly, this method assumes that any discriminatory policy has the same effect on every minority applicant or employee. Peters-Belson regression is a form of statistical matching akin in spirit to Bhattacharya's band-width matching. In the context of studying possible sex discrimination in pay, one fits a regression to the salaries of employees of the males and then predicts the salary of females from the male equation. This prediction estimates the salary a female employee would receive assuming her job-related characteristics were rewarded in a similar way as males, i.e. it provides a "statistical match" for the actual salary of each female. The difference, if any, between the actual and predicted salary of each female employee estimates her under-compensation. Both parametric and non-parametric approaches to Peters-Belson regression are described and their use illustrated on salary data based on the EEOC v. Shelby County equal pay case. Implications for the analysis of the data considered by courts to decide whether a class action is appropriate, as in Dukes v. Wal-Mart, are discussed.

Number of Pages in PDF File: 22

Date posted: December 7, 2010

Suggested Citation

Gastwirth, Joseph L. and Bura, Efstathia and Hikawa, Hiro, The Use of Peters-Belson Regression in Legal Cases (December 6, 2010). Available at SSRN: http://ssrn.com/abstract=1721123 or http://dx.doi.org/10.2139/ssrn.1721123

Contact Information

Joseph L. Gastwirth (Contact Author)
George Washington University - Columbian College of Arts and Sciences (email)
Washington, DC 20052
United States
202-994-6458 (Phone)
202-994-6917 (Fax)
HOME PAGE: http://www.gwu.edu/~stat/gastwirth.html

Efstathia Bura
George Washington Univesrity (email)
2121 I Street NW
Washington, DC 20052
United States
202-994-6358 (Phone)
HOME PAGE: http://home.gwu.edu/~ebura/

Hiro Hikawa

Five Bridges Advisors, LLC (email)
MD
United States